

From: [Tim Stone](#)
To: [BAYUK Dana](#)
Cc: [Ben Hung](#); [Bruce Marvin \(BMarvin@Geosyntec.com\)](#); [Cindy Bartlett \(CBartlett@Geosyntec.com\)](#); [Scott Coffey](#); [Carl Stivers](#); [HAFLEY Dan](#); [DeMaria, Eva](#); [LARSEN Henning](#); [John Edwards](#); [PETERSON Jenn L](#); [Jen Mott](#); [James Peale](#); [John Renda](#); [Karen Kosiarek \(KKosiarek@geosyntec.com\)](#); [Kelly Titkemeier \(kttitkemeier@maulfoster.com\)](#); [Mary Benzinger \(mbenzinger@maulfoster.com\)](#); [POULSEN Mike](#); ["Mike Murray"](#); [Madi Novak](#); [Myron Burr \(myron.burr@siltronic.com\)](#); [Patty Dost](#); [Lance Peterson \(PetersonLE@cdmsmith.com\)](#); [Bob Wyatt](#); [Rachel Melissa \(RMelissa@pearllegalgroup.com\)](#); [Rob Ede](#); [Sheldrake, Sean](#); [Sarah Riddle](#)
Subject: RE: Notification of Intent to Chemically Treat Gasco Source Control HC&C System Extraction Wells
Date: Friday, August 12, 2016 12:29:26 PM
Attachments: [NW Natural Wells--Re-Development Chemicals.msg](#)

Hello Dana,

NW Natural has reviewed your email regarding chemical treatment of selected pumping wells within the Gasco HC&C System network. Our responses to your questions and comments are provided below.

1. NW Natural evaluated the potential impacts of the selected treatment chemicals on the pretreatment plant processes and main treatment plant processes of the HC&C Groundwater Treatment System (GTS). Anchor QEA and Severson Environmental Services (SES) reviewed the manufacturer's product information sheets and MSDS documentation and determined which of the prescribed chemicals could potentially impact the treatment processes. The chemicals selected for testing were primarily proprietary dispersant polymers, and the results of the testing were provided to the Terry Driscoll (lead SES GTS Engineer) for evaluation. Correspondence documenting the results of SES's evaluation of the potential effects of these chemicals on the GTS is attached.

To further minimize any potential for impacts to the GTS, AQ has agreed that the water recovered during the well treatment process will be introduced to the pretreatment influent at no greater than 10% of the real-time HC&C system flow rate.

2. Seven (7) pumping wells with reduced specific capacity were selected for inorganic and microbiological testing by Water Systems Engineering, Inc. (WSE) of Ottawa, Kansas. WSE provided a diagnosis based on the testing results and recommended specific chemicals, dosages, and procedures for treatment of these wells:

- . PW-1U
- . PW-3U
- . PW-4U
- . PW-11U
- . PW-12U
- . PW-16U
- . PW-8-68 (PW-8L)

3. PW-8L is the identification used in system operations to represent the "actual" well identification of PW-8-68.

4. During the treatment and disinfection procedures, pumping rates will not be increased at lower alluvium wells as a means of maintaining hydraulic control.

I will be in the field implementing this work on Monday August 15, so please call my cell phone if you have further questions.

Thanks,

Tim Stone
ANCHOR QEA, LLC

D 503.924.6174

C 503.475.9150

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-----Original Message-----

From: BAYUK Dana [<mailto:dana.bayuk@state.or.us>]

Sent: Friday, August 12, 2016 7:57 AM

To: Tim Stone <tstone@anchorqea.com>

Cc: Ben Hung <bhung@anchorqea.com>; Bruce Marvin (BMarvin@Geosyntec.com) <bmarvin@geosyntec.com>; Cindy Bartlett (CBartlett@Geosyntec.com) <cbartlett@geosyntec.com>; Scott Coffey (coffeyse@cdmsmith.com) <coffeyse@cdmsmith.com>; Carl Stivers <cstivers@anchorqea.com>; HAFLEY Dan <dan.hafley@state.or.us>; Eva DeMaria (DeMaria.Eva@epa.gov) <demaria.eva@epa.gov>; LARSEN Henning <henning.larsen@state.or.us>; John Edwards <jedwards@anchorqea.com>; PETERSON Jenn L <jenn.l.peterson@state.or.us>; Jen Mott <jmott@anchorqea.com>; James Peale <jpeale@maulfoster.com>; John Renda <jrenda@anchorqea.com>; Karen Kosiarek (KKosiarek@geosyntec.com) <kkosiarek@geosyntec.com>; Kelly Titkemeier (ktitkemeier@maulfoster.com) <ktitkemeier@maulfoster.com>; Mary Benzinger (mbenzinger@maulfoster.com) <mbenzinger@maulfoster.com>; POULSEN Mike <mike.poulsen@state.or.us>; 'Mike Murray' <mmurray@maulfoster.com>; Madi Novak <mnovak@maulfoster.com>; Myron Burr (myron.burr@siltronic.com) <myron.burr@siltronic.com>; Patty Dost <pdost@pearllegalgroup.com>; Lance Peterson (PetersonLE@cdmsmith.com) <peterstone@cdmsmith.com>; Bob Wyatt <rjw@nwnatural.com>; Rachel Melissa (RMelissa@pearllegalgroup.com) <rmelissa@pearllegalgroup.com>; Rob Ede <robe@hahnenv.com>; Sean Sheldrake <sheldrake.sean@epa.gov>; Sarah Riddle <sriddle@pearllegalgroup.com>

Subject: RE: Notification of Intent to Chemically Treat Gasco Source Control HC&C System Extraction Wells

Good morning Tim.

DEQ reviewed the "Notification of intent to chemically treat selected Gasco Groundwater Source Control HC&C extraction wells" dated August 5, 2016 (Well Treatment Memorandum). The Well Treatment Memorandum presents NW Natural's approach to chemically treat and disinfect five extraction wells with declining specific capacities, including PW-3U, PW-4U, PW-8L, PW-12U, and PW-16U.

During a telephone call on Wednesday August 10th we discussed the Well Treatment Memorandum. Based on the phone call DEQ understands that prior to selecting the approach NW Natural evaluated the potential for the well treatment and disinfection chemicals to impact the Siltronic and Gasco pre-treatment facilities and the main treatment plant. During the call I indicated that before work proceeds, NW Natural should provide DEQ with documentation of the evaluation and a description of any additional steps to be taken during well treatment/disinfection to minimize potential impacts.

DEQ's additional comments and requests for information are provided below.

- The list of the seven extraction mentioned in the Well Treatment Memorandum that currently exhibit declining specific capacities should be provided for completeness.
- NW Natural should confirm that PW-8L is PW-8-68.
- During treatment and disinfection of Upper Alluvium WBZ extraction wells PW-3U, PW-4U, and PW-12U, pumping rates at Lower Alluvium WBZ wells will not be increased to maintain hydraulic control.

Tim, please contact me with questions about this e-mail and hope your morning is going well.

Dana

Mr. Dana Bayuk

Cleanup Program Project Manager/Hydrogeologist Oregon Department of Environmental Quality Northwest Region
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Please visit our website at <http://www.oregon.gov/DEQ/><<https://deqmail.deq.state.or.us/owa/redir.aspx?C=expW59Hf5PUaZQh14CmQiIBhMMhcOKtAICv8HjAWBmf41qiKIUXf-S2Jkwgyvoh92WdxoWiGazVI.&URL=http%3a%2f%2fwww.oregon.gov%2fDEQ%2f>>

From: Jen Mott [jmott@anchorqea.com]

Sent: Friday, August 05, 2016 9:09 AM

To: BAYUK Dana

Cc: Sarah Riddle; Eva DeMaria (DeMaria.Eva@epa.gov); John Renda; Bob Wyatt; Patty Dost; John Edwards; Carl Stivers; Ben Hung; Rob Ede; Rachel Melissa (RMelissa@pearllegalgroup.com); Sean Sheldrake; Scott Coffey (coffeyse@cdmsmith.com); Lance Peterson (PetersonLE@cdmsmith.com); HAFLEY Dan; Bruce Marvin (BMarvin@Geosyntec.com); Cindy Bartlett (CBartlett@Geosyntec.com); LARSEN Henning; PETERSON Jenn L; Karen Kosiarek (KKosiarek@geosyntec.com); POULSEN Mike; James Peale; Kelly Titkemeier (ktitkemeier@maulfoster.com); Madi Novak; Mary Benzinger (mbenzinger@maulfoster.com); 'Mike Murray'; Myron Burr (myron.burr@siltronic.com); Tim Stone; Jen Mott

Subject: Notification of Intent to Chemically Treat Gasco Source Control HC&C System Extraction Wells

Dana,

The following email is provided on behalf of Tim Stone.

Hello Dana,

During the week of August 15-19, NW Natural intends to chemically treat selected Gasco Source Control HC&C System extraction wells to increase their specific capacities. The procedures outlined in the attached memo were recommended by a water system consulting laboratory (Water Systems Engineering, Inc.) based on their testing of samples from system wells where decreased specific capacities have been observed.

Please review the attached memo and contact me if you have any questions or comments related to this plan.

Thanks,

Tim Stone

Thank you,

Jen Mott :)

Anchor QEA, LLC

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